Science GE DOK Alignment Char t **PHYSICAL SCIENCE** **Grades 7-8** **GE 9-12**

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Science Concepts	Examples/Practice Items
Enduring Knowledge: All living and non-living things are composed of matter having characteristic properties that distinguish one substance from another.			
DOK 1 **PS1(5-8)INQ-1** **DOK 2** **PS1-4**	**S7-8:9** **(DOK 2)** **Students demonstrate their understanding of the Properties of Matter by…** • **Calculating the density** of regularly and irregularly shaped objects. **AND** • Explaining why all three states of matter can be observed in a room that has a uniform temperature.	Science Concepts: a. The density of a substance can be measured and quantified as the mass (amount of a substance) that is contained per unit volume of that substance. b. Changing the temperature of materials will change the density of the material. c. All substances have a unique temperature at which a change in phase (state of matter) occurs. Boiling point and freezing or melting point refers to these unique phase change temperatures.	
DOK 2 **PS1-5** **DOK 1** **PS1-5**	**S7-8:10** **(DOK 2)** **Students demonstrate their understanding of the Properties of Matter by…** • Illustrating through words or representations the differences between **atoms** and **molecules**. **AND** • Recognizing that all living and non-living things are formed from combinations of about 100 elements.	Science Concepts: a. All matter is made up of atoms that are too small to see. b. Atoms bond together to form molecules. c. An element is a substance in which the atoms are all the same. d. All living and non-living things are formed from combinations of about 100 elements.	
S7-8:11 Not assessed at this grade level.			
DOK 2 **PS1-4**	**S7-8:12** **(DOK 2)** **Students demonstrate their understanding of the States of Matter by…** • Modeling (plays, models, diagrams) molecular motion of the three states of matter and explaining how that motion defines each state.	Science Concepts: a. Atoms and molecules are in perpetual motion. b. The atoms in solids vibrate closely together. c. The atoms in liquids loosely slide past one another. d. The atoms in gases move freely apart from one another, and collide with one another.	

Science GE DOK Alignment Chart **PHYSICAL SCIENCE** **Grades 7-8** **GE 13-14**

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Science Concepts	Examples/Practice Items
Enduring Knowledge: All living and non-living things are composed of matter having characteristic properties that distinguish one substance from another.			
DOK 2 **PS1-4**	**S7-8:13** **(DOK 2)** **Students demonstrate their understanding of the Properties of a Gas by…** • Using real world examples (tires, balloons, soda), predict and explain the effect that a change in one variable (**pressure, temperature** or **volume**) will have on the others.	Science Concepts: a. There exists a predictable relationship among the volume, temperature, and amount of a gas and the pressure the gas exerts. b. For any specified amount of a gas, the pressure that the gas exerts will increase as the temperature increases or the volume of the gas decreases. The pressure that the gas exerts will decrease as the temperature decreases or the volume of the gas increases. c. Gases exert pressure in all directions.	
Enduring Knowledge: A transfer of energy can result in the physical change of state of a substance.			
DOK 3 **PS1-2** **PS1-4** **DOK 2** **PS1-4**	**S7-8:14** **(DOK 3)** **Students demonstrate their understanding of Physical Change by…** • Constructing their own models that represent the states of matter at the molecular level and explaining the effect of increased and decreased heat energy on the motion and arrangement of molecules. **AND** • Observing the physical processes of evaporation and condensation, and accounting for the disappearance and appearance of liquid water in terms of molecular motion and conservation of mass.	Science Concepts: a. Increased temperature of substances causes increased motion of the atoms and molecules in the substance. b. As the temperature and motion of molecules in a substance increase, the space between molecules in the substance increases possibly causing a change in state.	**(DOK 2)** • Explain the relationship between temperature and molecular motion. **(DOK 3)** • Using the materials provided, design a demonstration that illustrates the relationship between temperature and molecular motion and explain your observations.

Science GE DOK Alignment Chart **PHYSICAL SCIENCE** **Grades 7-8** **GE 15-19**

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Science Concepts	Examples/Practice Items
Enduring Knowledge: When matter undergoes a chemical change it turns into a new and different substance whose properties are different from the original. No matter how substances interact with one another, the total mass of the system remains the same.			
DOK 2 **PS1-3**	**S7-8:15** **(DOK 2)** **Students demonstrate their understanding of Chemical Change by…** • Observing evidence of chemical change and offering qualitative explanations for the observed changes in substances in terms of interaction and rearrangement of the atoms, and the production of new substances with different characteristics, but the same mass as the original substance.	Science Concepts a. Chemical change is a transformation of matter that results from the interaction of the molecules in a substance and a new substance results (e.g., electrolysis of water). Chemical change is not reversible. b. During chemical change, the atoms in the substances are rearranged and because the mass of the product of a chemical reaction is the same as the mass of the reactants in that reaction, we know the total number of atoms in the substances stays the same (Conservation of Mass).	**(DOK 2)** • Observe and describe the characteristics of the new substances that form when a marshmallow is burned.
S7-8:16 Not assessed at this grade level.			
Enduring Knowledge: The nucleus of some atoms is unstable and may spontaneously decay.			
S7-8:17 Not assessed at this grade level.			
S7-8:18 Not assessed at this grade level.			
Enduring Knowledge: Everything is constantly moving; motion is relative, but the motion of an object can be described and predicted by tracing and measuring its position over time.			
DOK 3 **PS3(5-8)INQ + POC-8** **DOK 2** **PS3(5-8)INQ + POC-8**	**S7-8:19** **(DOK 3)** **Students demonstrate their understanding of Motion by…** • Designing investigations that illustrate the effect of a change in mass or **velocity** on an object's **momentum**. **AND** • Describing and explaining how the **acceleration** of an object is proportional to the force on the object and inversely proportional to the mass of the object.	Science Concepts: a. Velocity indicates the speed and the direction of a moving object. b. Momentum is the characteristic of an object in motion that depends on the object's mass and velocity. Momentum provides the ability for a moving object to stay in motion without an additional force. c. Acceleration is a relationship between the force applied to a moving object and the mass of the object (Newton's Second Law).	

Science GE DOK Alignment Chart **PHYSICAL SCIENCE** **Grades 7-8** **GE 20-22**

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Science Concepts	Examples/Practice Items
Enduring Knowledge: Everything is constantly moving; motion is relative, but the motion of an object can be described and predicted by tracing and measuring its position over time.			
S7-8: 20 Not assessed at this grade level.			
Enduring Knowledge (Force): Force is an influence that can change the motion of an object.			
DOK 2 **PS3(5-8)INQ + POC-8**	**S7-8:21** **(DOK 2)** **Students demonstrate their understanding of Force by…** • Diagramming or describing, after observing a moving object, the forces acting on the object before and after it is put into motion (Students include in their diagram or description, the **effect of these forces on the motion** of the object.)	Science Concepts: a. An object that is not subjected to a force will continue to move at a constant speed and in a straight line. b. If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another,depending on their direction and magnitude. c. Unbalanced forces will cause changes in speed or direction of an object's motion.	
DOK 3 **PS3(5-8)INQ + POC-8** **ESS2(5-8)SAE + POC-8**	**S7-8:22** **(DOK 3)** **Students demonstrate their understanding of Gravitational force by…** • Describing and explaining the effects of gravitational force on objects in the Solar System, and identifying evidence that the **force of gravity is relative** to the mass of objects and their distance apart.	Science Concepts: a. The force of gravity depends on the amount of mass objects have and how far apart they may be. b. The force of gravity is hard to detect unless at least one of the objects has considerable mass.	

Science GE DOK Alignment Chart **PHYSICAL SCIENCE** **Grades 7-8** **GE 23-26**

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Science Concepts	Examples/Practice Items
Enduring Knowledge: Energy is necessary for change to occur. It is the ability of matter to bring about change. ***There are many forms of energy.** ***The total energy in the universe is constant.** ***Energy can be transformed and transferred, but not destroyed (Conservation of Energy).** ***Energy transfers and transformations exhibit the characteristics of systems with inputs, processes and outputs, as well as connections to other systems**			
DOK 3 PS2(5-8)SAE + POC-6 PS2(5-8)SAE-7 ESS1(5-8)SAE + POC-4 **DOK 2** PS2(5-8)SAE-7 ESS2(5-8)NOS-7	**S7-8:23** **(DOK 3)** **Students demonstrate their understanding of Heat Energy by…** • Creating a diagram, model, or analogy for a material in a warm and cool state, showing or describing the motion of the molecules. **AND** • Creating a diagram, model, or analogy to explain differences among **conduction**, **convection**, and **radiation**, and using their visual to explain how heat energy travels in different directions and through different materials by each method of energy transfer.	Science Concepts: a. Heat energy is the motion of molecules. b. Temperature is a measure of the rate of motion of the molecules in a substance. c. Increased temperature causes increased motion of molecules and increases the heat energy of they system. d. Heat energy is transferred by: Conduction—Collision of molecules in solids. Convection—Organized flow of heat currents through a fluid. Radiation—Transfer by waves that can travel through a vacuum.	
DOK 3 PS2(5-8)SAE + POC-6 **DOK 2**	**S7-8:24** **(DOK 3)** **Students demonstrate their understanding of Electrical Energy by…** • Building an electric circuit and explaining the transfer of electrical energy into heat, light, and sound, leaving the system, but not destroyed. **AND** • Predicting the effect of a change in voltage in the circuit system.	Science Concepts: a. Electric circuits provide a means of transferring electrical energy when heat, light, and sound are produced. The electrical energy is spread out yet still conserved. b. Electric charges can have “potential” energy (voltage). The higher the potential energy of the charges, the higher the voltage.	
S7-8:25 Not assessed at this grade level.			
S7-8:26 Not assessed at this grade level.			

Science GE DOK Alignment Chart **PHYSICAL SCIENCE** **Grades 7-8** **GE 27-30**

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Science Concepts	Examples/Practice Items
Enduring Knowledge: Energy is necessary for change to occur. It is the ability of matter to bring about change. ***There are many forms of energy.** ***The total energy in the universe is constant.** ***Energy can be transformed and transferred, but not destroyed (Conservation of Energy).** ***Energy transfers and transformations exhibit the characteristics of systems with inputs, processes and outputs, as well as connections to other systems**			
S7-8:27 Not assessed at this grade level.			
DOK 3 **PS2(5-8)SAE + POC-6** **DOK 1**	**S7-8:28** **(DOK 3)** **Students demonstrate their understanding of Light Energy by…** • Designing demonstrations that represent the characteristics of light energy transfer. **AND** • Explaining that visible light is made up of colored light waves.	Science Concepts: a. Light is a form of radiant energy. b. Transmitted light can be refracted (change in direction of the light) when it passes from one medium into another. c. Visible light is part of the electromagnetic spectrum. Visible (white) light is made up of colored light waves of the visible spectrum.	
S7-8:29 Not assessed at this grade level.			